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| 09/830,790 | 07/13/2001 | Yilian Yuan | 32717-PCTUSA | 3697 |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| | Application No. | Applicant(s) |
|---|---|---|
| **Office Action Summary** | 09/830,790 | YUAN, YILIAN |
| | Examiner | Art Unit | |
| | Jeffrey D. Carlson | 3622 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11 April 2007*.

2a)☐ This action is **FINAL**.      2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *18-23* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

## DETAILED ACTION

1.      This action is responsive to the papers filed 3/5/07 and 4/11/07.

### *Claim Objections*

Claims 18, 20, 21, 23 are objected to because of the following informalities:

■       Claim 18 (d), the period should be replaced by a semicolon.

■       Claim 18 (e), "flitted" should be replaced by "fitted".

■       Claim 20, each phrase should end with a semicolon except for the last one which requires a period.

■       Claim 21 (e) and (f), "for" should be inserted after each "means".

■       Claim 23 each phrase should end with a semicolon except for the last one which requires a period.

■       Claim 23, "means for" should appear before each verb for clarity.  As it stands now, the use of the single "means for:" (with a colon) makes it unclear whether any of the 2$^{nd}$ through 5$^{th}$ verbs are method steps or "means for" type structure.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 101*

2.      35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

■     **Claims 21-23 cover subject matter incompatible with the statutory**

   **provisions of 35 U.S.C. 101** (i.e. a human as part of the system structure).

   MPEP at §2105.  These apparatus claims attempt to claim structure in the

   form of living subject matter (i.e. the analyst) as elements of the apparatus

   which provide part of the "system" at least for the subjective steps of

   "means...for identifying a marketing event...for selecting a model...for

   selecting a functional form...fitting the model...for calculating product

   performance."

3.     **Additionally, Applicant's Claims 18-23 are further rejected under 35 U.S.C.**

**101 as failing to satisfy the "useful, concrete, and tangible result"** criteria outlined

in State Street.  In particular, a review of Applicant's disclosure supports the assertion

that the invention defined by the claims fails to produce a concrete result.

4.     Concerning the issue of concreteness, Applicant's claim 18 recites, inter alia, the

steps of identifying a market event, selecting a model for the relationship between a

promotion and a product, detecting a lag structure, selecting a functional form,

computing model parameters by fitting the model, and calculating product performance

attributable to the promotion.  System Claim 21 recites substantially similar limitations.

These claim limitations are supported in the specification by discussion regarding Steps

210-270, 310-360, and 410-420.

5.     Applicant states that all disclosed steps can be performed manually or using a

computer.  However, several of the steps in Applicant's lone explicitly disclosed

embodiment require subjective decisions on the part of a human research analyst. For

instance, the step of determining a market event ("Step 210") is described only in terms

of manual identification (see Applicant's specification at p. 5, ℓ. 19-20), corresponding to

the step of identification of a market event recited in the claims. Such manual

identification is highly subjective, as the outcome of this step (and consequently, all

steps afterward according to Figure 2) depends not only on the skill of the research

analyst, but also on the investigative interest/goal and mood of this analyst. Further, not

all market events can be consistently specified within a given econometric model,

demonstrated by the continuing application of new models to new market-related

phenomena in the literature. In particular, it is unclear whether the Box-Jenkins transfer

function approach relied upon by Applicant is compatible with certain market events

correlated to the explanatory variables in the lagged model (Edlund, Per-Olov,

"Identification of the Multi-input Box-Jenkins Transfer Function Model," Journal of

Forecasting, Jul-Sept 1984, Vol. 3, No. 3, 297-308, at p. 297, ℓ. 9-13). Moreover,

Applicant's method distinguishes between only two particular effects of a market event

at Steps 410 and 420. In the event the market event identified in Step 210 does not

produce such readily distinguishable results (for instance, if such impact were obscured

by another market event or exogenous trend), Applicant's method would fail to provide a

concrete and reproducible result.

6.      Several other steps also require subjective decisions to be made and have no

associated teaching of an algorithmic or computer implementation of such steps. These

steps include Steps 230-270 as described and recited in the claims. For example, the

step of selecting a model for the relationship ("Step 230") relies upon a research analyst

to specify the initial model structure (Applicant's specification at p. 5, ℓ. 30) with no

suggestion on how to distinguish among "model fitting information," "reasonableness of

coefficients," and "model robustness," subjective criteria in themselves. Although

suggestion is made that multiple model forms should be tried by an analyst (effectively

performing Applicant's entire method multiple times), such a limitation is neither

reflected in the claims nor the Figures. Regardless of the inclusion of iterations,

Applicant's method and results would vary significantly and depend on the subjective

judgments of a research analyst at several steps of Applicant's method. If the iterations

of the method are necessary for the claimed invention to be operative, then the pending

Claims require amendment to positively recite this critical element. MPEP at §2172.01.

7.      More generally, results or interpretation of results from empirical methods can

vary dramatically given certain model choices and subjective interpretations made along

the way. For example, the outcome and interpretation of a study by R. P. Leone differs

substantially from those of Wichern and Jones due to a different choice of intervention

(impulse vs. step) in modeling the impact of the American Dental Association's

endorsement of Crest dental cream (see Leone, Robert P., "Forecasting the Effect of an

Environmental Change on Market Performance: An Intervention Time-series Approach,"

International Journal of Forecasting, 1987, Vol. 3, 463-478, herein "Leone 1987" at p.

471, ℓ. 3 – p. 472, ℓ. 5; p. 472, ℓ. 46-48). It should be noted that both studies were

accepted by peer-reviewed journals and are often cited by related papers. Accordingly,

given the unpredictability associated with empirical methodology, claiming subject

matter pertaining to empirical methods (and associated means) concretely in the

statutory sense requires more information than is disclosed by Applicant's, even

considering those of ordinary skill in the art. Therefore, upon reviewing Applicant's

Claims and specification, the Applicant's claimed method and associated system lacks

concreteness, a judicially established requirement of 35 U.S.C. 101.

8.      Applicant's step of "calculating product performance attributable to the promotion

according to the fitted model" is interpreted as producing an equation or equations, in

accordance with the ordinary and customary meaning of "fit" in the art of time-series

data analysis. However, to usefully "quantify" the relationship, the equations (or

associated coefficients and errors) must undergo further mathematical and/or subjective

evaluation (Wichern at p. 334, $\ell$. 3 – p. 336, $\ell$. 2) to produce a tangible result.

Applicant's specification contains no teaching to produce such a tangible result (e.g. the

incremental product performance attributable to a promotion) with any concreteness

beyond the mathematical relationship described above. In contrast, the system in State

Street produced a final share price, held to be a practical application of a mathematical

algorithm, formula, or calculation. State Street at 1601.


### Claim Rejections - 35 USC § 112

9.      The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

10.    **Claims 18-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.** Claims 18-23 fail to meet the concreteness criterion of utility set forth in State Street. Consequently, the Claims therefore contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

11.    The standard for enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. Factors to be considered when determining a lack of enablement and whether necessary experimentation is undue include the breadth of the claims, the nature of the invention, the state of the prior art, the state of the prior art, the level of one of ordinary skill, the level of predictability in the art, the amount of direction provided by the inventor, the existence of working examples, and the quantity of experimentation needed to make or use the invention based on the content of the disclosure. MPEP at §2164.01(a). Upon a review of all of the above factors and the evidence as a whole, sufficient reason exists to support a rejection under the enablement requirement.

12.    Although Applicant attempts to differentiate the claimed method from certain "trial-and-error" prior art methods (Applicant's specification at p. 9, ℓ. 12-20), Applicant's method is inherently "trial-and-error" due to its reliance on Box-Jenkins transfer function methods and other iterative processes disclosed by Applicant. These iterations are either explicitly noted as relying upon the subjective participation of a research analyst

or the disclosure is silent with respect to an enabling description of a computer (or

algorithmic) implementation of such steps. A detailed discussion of Steps 230-260 is

included below.

13.     As discussed above at Paragraph 21, the step of determining a relationship

("Step 230") relies upon the subjective input of a research analyst and implies the

necessity of iterations without satisfactorily specifying the criteria upon which such

iterations would rely beyond simply naming model fitting information, reasonable

coefficients, and robustness. At least the claimed steps of detecting a lag structure,

selecting a functional form, and fitting the model, evaluating the model ("Step 240,"

"Step 250," and "Step 260," respectively) similarly rely upon subjective human input and

yield results that vary significantly depending on such input.

14.     Step 240 includes several sub-steps, Steps 310-360, which are reflected in the

claims. Applicant's sole disclosed embodiment of Step 240 relies upon the ARIMA

model fitting approach pioneered by Box-Jenkins at (sub-) at Step 310. However, as

highlighted by the prior art, the Box-Jenkins model requires iterations (Box 1975 at p.

70, Col. 2, ℓ. 13 – p. 71, Col. 1, ℓ. 4) and is dependent on several subjective decisions

on the part of the researcher (Newbold, Paul, "The Principles of the Box-Jenkins

Approach," Operational Research Quarterly, Jul 1975, Vol. 26, No. 2, Part 2, 397-412,

herein "Newbold," at p. 397, ℓ. 13-21), the outcomes of the approach varying greatly,

including uninterpretable or undesirable results (Newbold at p. 398, ℓ. 10-14, 25-32; p.

409, ℓ. 19 – p. 410, ℓ. 39). Thus, the flexibility provided by the Box-Jenkins Method

leads to misuse even by those skilled in the art of time-series data analysis (Newbold at

p. 411, ℓ. 27-33). Further, to the extent that Claims 18-23 read on <u>Helmer et al</u>. (Helmer, Richard M. and Johny K. Johansson, "An Exposition of the Box-Jenkins Transfer Function Analysis With an Application to the Advertising-Sales Relationship," Journal of Marketing Research, May 1977, Vol. 14, 227-239, herein "<u>Helmer</u>"), discussed in detail starting at Paragraph 69, Applicant's claims lack enablement since many of the model choices are resolved "on fairly ambiguous bases" and are "a matter of art" (<u>Helmer</u> at p. 230, ℓ. 36-50).

15.    Therefore, the evidence of record as a whole supports the prima facie rejection of Claims 18-23 as failing to comply with the enablement requirement.

16.    The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**17.    Claims 18-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

- ■    Claim 18 (b), there is no antecedent basis for each data variable.

- ■    Claim 18 (c), there is no antecedent basis for the "at least one" promotion.

- ■    Claim 18 (d), the phrase ends abruptly, providing doubt as to the desired claim scope.

- ■    Claim 18 (f) the vague "other market variable" renders the claim scope uncertain.

- ■    Claim 18 (e), there is no antecedent basis for said user.

- ■     Claim 20 purports to further limit the step of applying a cross-correlation function, yet it also includes other steps such as applying the fitted model, yet the base claim requires the model fitting in steps different from applying the cross-correlation function.

- ■     Claims 21-23 are rejected with similar analysis.

### Claim Scope Analysis

18.    Applicant has presented new claim language that will now be interpreted by the examiner.

- ■     Applicant includes language such as "applying a cross-correlation function to the market data to systematically detect a promotion lag structure." However the "to systematically detect a promotion lag structure" is not taken to represent positively required steps, but rather represent why something is done, or foreshadowing what else *might* be capable of accomplishment if desired.

### Claim Rejections - 35 USC § 102

19.    The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

20.    **Claims 18, 19, 21, 22 are rejected under 35 U.S.C. 102(b) as being**

**anticipated by** <u>Basara</u> **(Basara, Lisa Ruby, "The Impact of a Direct-To-Consumer**

**Prescription Medication Advertising Campaign on New Prescription Volume,"**

**Drug Information Journal, 1996, Vol. 30, 715-729).**

21.    Regarding claims 18, 21, <u>Basara</u> teaches a method including steps of

determining one or more market events (<u>Basara</u> at p. 719, Col. 1, ℓ. 6 – Col. 2, ℓ. 36

teaches mitigating circumstances and other criteria (no competitors), examining product

performance and promotion data (the entire crux of Basara is to examine the data;

further Basara teaches selection of a campaign to include a "testable" campaign that is

free from a lack of data (taken to represent abnormal data). Further, Basara teaches

that the economy and "other factors" can affect sales performance and these external

events are accounted for by the introduction of a "noise" component [pg 721 col 2 lines

1-40]. Basara teaches determining a relationship ("an increase") between each of the

one or more promotions and the product (<u>Basara</u> at p. 721, Col. 1, ℓ. 14-46),

systematically detecting a promotion lag structure between the one or more promotions

and the product performance for the product (<u>Basara</u> at p. 721, Col. 1, ℓ. 48 – p. 723,

Col. 2, ℓ. 6), selecting one or more functional forms to account for an impact of each of

the one or more determined market events which may impact the product performance

(<u>Basara</u> at p. 722, Col. 1, ℓ. 36 – p. 723, Col. 1, ℓ. 12), evaluating each of the selected

functional forms to account for the one or more determined market events (<u>Basara</u> at p.

723, Col. 1, ℓ. 13 – Col. 2, ℓ. 6), and quantifying a relationship between the one or more

promotions and the product performance for the product by taking into account the

evaluated selected functional forms (Basara at p. 723, Col. 2, ℓ. 9 – p. 725, Col. 1, ℓ. 28;

Table 2). The detection of lag is taken to represent application using a cross-correlation

function that examines the relationship between the promotion and the product

performance. Basara teaches the step of selecting a functional form to include plotting

sales versus time (Basara at p. 718, ℓ. 10-18) and selecting a functional form (Basara at

p. 722, Col. 1, ℓ. 36 – p. 723, Col. 1, ℓ. 12). Basara's fitted model is taken to include

computation of the model parameters in order to address the variables present, as

claimed by applicant. The purpose of Basara is to measure the impact of promotion on

sales and it is taken to be inherent that the calculated measurements be output to

appropriate people for consideration.

22.     Regarding claims 19, 22, Basara also discloses that the model/relationship

between one or more promotions and product performance includes a quantified portion

and a residual portion, and evaluating the residual portion to detect auto-correlation

(Basara at p. 721, Col. 2, ℓ. 39 – p. 722, Col. 1, ℓ. 34).


23.     **Alternatively, Claims 18, 19, 21, 22 are rejected under 35 U.S.C. 102(b) as**

**being anticipated by Box 1975.** Although the specific examples described within Box

1975 relate to smog data and the consumer price index, Box 1975 states that the

disclosed techniques also apply to investigating the possible effect of promotions,

advertising campaigns, and price changes on the sale of a product (Box 1975 at p. 70,

Col. 1, ℓ. 30-32).

24.    Box 1975 teaches all limitations recited in Applicant's Claim 18, including steps of

determining one or more market events (Box 1975 at p. 70, Col. 1, $\ell$. 10-32; Figure A),

determining a relationship between each of one or more promotions and a product (Box

1975 at p. 71, Col. 1, $\ell$. 32 – Col. 2, $\ell$. 2), detecting a promotion lag structure between

one or more promotions and product performance (Box 1975 at p. 73, Col. 2, $\ell$. 4-18),

selecting one or more functional forms to account for the impact of each of the one or

more determined market events (Box 1975 at p. 71, Col. 2, $\ell$. 4 – p. 72, Col. 2, $\ell$. 35; p.

73, Col. 2, $\ell$. 19-45), evaluating each of the selected functional forms to account for the

one or more determined market events (Box 1975 at p. 73, Col. 2, $\ell$. 19-45), and

quantifying a relationship between the one or more promotions and product

performance by taking into account the evaluated functional forms (Box 1975 at p. 73,

Col. 2, $\ell$. 46 – p. 74, Col. 1, $\ell$. 15).

25.    In applying Box 1975, the noise figure, $N_t$, represents the lagged relationship of

promotions on product performance where those promotions are different from the

market events represented by the intervention terms, $\xi_{tj}$. $N_t$, in effect, is a catchall

function taking into account the impact on product performance of all factors other than

the explicitly specified market events.  As described in the reference, fitting the model

can make it possible to evaluate the explanatory potential of the noise figure (and

therefore the promotion impact) with respect to product performance (Box 1975 at p. 71,

Col. 2, $\ell$. 32-36).  Alternatively, the market event/intervention terms, $\xi_{tj}$, of Box 1975 can

also include one or more promotions, such as several months of advertising expenditure

for a single campaign (Box 1975 at p. 72, Col. 2, $\ell$. 32-36; see also Wichern at p. 332, $\ell$.

1-2) since the reference provides teaching that, generally, $\xi_{tj}$ can be an exogenous time series (Box 1975 at p. 71, Col. 2, $\ell$. 25-26). Such an application would leave the noise term to account for market events or, as in Basara, the series of promotions could constitute the market event. Accordingly, the general model set forth by Box 1975 accommodates both interpretations of market events in relation to promotions: (1) a market event being separate from a studied promotion; or (2) a market event including at least one promotion. For an examples of interpretation (1), rejections based on Leone 1987 and Helmer are detailed beginning at Paragraphs 64 and 69, respectively. Box 1975's fitted model is taken to include computation of the model parameters in order to address the variables present, as claimed by applicant. The purpose of Box 1975 is to measure the impact of promotion on sales and it is taken to be inherent that the calculated measurements be output to appropriate people for consideration.

26.    Regarding claims 19, 22, Box 1975 also anticipates the limitations, including a relationship between the one or more promotions and product performance including a quantified portion and a residual portion, and a step of evaluating the residual portion to detect auto-correlation (Box 1975 at p. 73, Col. 2, $\ell$. 10-16; p. 74, Col. 2, $\ell$. 16). The quantified and residual portions are inherently taught by the use of transfer function analysis in Box 1975.


27.    **In another alternative application of prior art, Claims 18, 19, 21, 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Leone 1987.**

28.    Leone 1987 discloses steps of determining one or more market events (Leone

1987 at p. 463, $\ell$. 5-8; p. 464, $\ell$. 1-21), determining a relationship between each of one

or more promotions and a product (Leone 1987 at p. 465, $\ell$. 1-10), detecting a

promotion lag structure between one or more promotions and product performance

(Leone 1987 at p. 465, $\ell$. 11 – p. 466, $\ell$. 6), selecting one or more functional forms to

account for the impact of each of the one or more determined market events (Leone

1987 at p. 466, $\ell$. 7 – p. 467, $\ell$. 3), evaluating each of the selected functional forms to

account for the one or more determined market events (Leone 1987 at p. 467, $\ell$. 3-5; p.

472, $\ell$. 20-41), and quantifying a relationship between the one or more promotions and

product performance by taking into account the evaluated functional forms (Leone 1987

at Table 1).  Leone 1987's fitted model is taken to include computation of the model

parameters in order to address the variables present, as claimed by applicant.  The

purpose of Leone 1987 is to measure the impact of promotion on sales and it is taken to

be inherent that the calculated measurements be output to appropriate people for

consideration.

29.    Regarding claims 19, 22, following from the use of the Box-Jenkins method, the

relationship between the one or more promotions and product performance in Leone

1987 inherently includes a quantified portion and a residual portion (Leone 1987 at p.

465, $\ell$. 1-10), and Fig. 1 of Leone 1987 teaches a step of evaluating the residual portion

to detect auto-correlation.

**30.    In yet another alternative, Claims 18-23 are rejected under 35 U.S.C. 102(b)
as being anticipated by Helmer.**

31.    Helmer teaches Applicant's method as recited in Claim 18, including determining
one or more market events (Helmer at p. 230, Col. 1, $\ell$. 47 – Col. 2, $\ell$. 13), examining
the determined one or more market events (Helmer at p. 233, Col. 2, $\ell$. 16-22),
determining a relationship between each of the one or more promotions and the product
(Helmer at Fig. 2 (1); p. 229, Col. 2, $\ell$. 8-14; p. 231, Col. 1, $\ell$. 3-19), systematically
detecting a promotion lag structure between the one or more promotions and the
product performance for the product (Helmer at Fig. 2(2)-(6); p. 229, Col. 2, $\ell$. 15 – p.
230, Col. 1, $\ell$. 46; p. 231, Col. 1, $\ell$. 21 – p. 233, Col. 2, $\ell$. 5), selecting one or more
functional forms to account for any impact of each of the one or more determined
market events which may impact product performance (Helmer at Fig. 2(7); p. 230, Col.
1, $\ell$. 47 – Col. 2, $\ell$. 13; p. 233, Col. 2, $\ell$. 7-32), evaluating each of the selected functional
forms to account for the one or more determined market events (Helmer at Fig. 2(7); p.
230, Col. 1, $\ell$. 47 – Col. 2, $\ell$. 13; p. 233, Col. 2, $\ell$. 33 – p. 234, Col. 1, $\ell$. 24), and
quantifying a relationship between the one or more promotions and product
performance for the product by taking into account the evaluated selected functional
forms (Helmer at Fig. 2(8); p. 230, Col. 2, $\ell$. 13-19; p. 234, Col. 1, $\ell$. 25 – Col. 2, $\ell$. 14).

32.    In contrast to the interpretation applied using Box 1975, $N_t$ in Helmer is taken to
represent the impact of one or more market events other than the promotions. As
described in Helmer, the effects of situational and other unspecified factors are
characterized as "noise" or "shocks." $N_t$ represents the composite effect of these

factors. Situational and other unspecified factors in <u>Helmer</u> include all factors other than the impact of promotions on sales, which is modeled and quantified by <u>Helmer</u>'s Steps 1-6. Therefore, by separately characterizing the noise, the incremental impact of promotions on performance can be measured.

33.     The "second diagnostic check" of <u>Helmer</u> further discloses checking for multicollinearity problems, by detecting cross-correlation between the independent variable and the residuals, which are themselves a function of the independent variable (<u>Helmer</u> at p. 234, Col. 2, $\ell$. 29 – p. 235, Col. 1, $\ell$. 5). <u>Helmer</u> also describes a relationship between the one or more promotions and product performance including a quantified portion and a residual portion, as well as evaluating the residual portion to detect auto-correlation (<u>Helmer</u> at p. 228, Col. 1, $\ell$. 24 – Col. 2, $\ell$. 23; p. 234, Col. 2, $\ell$. 16-28), <u>Helmer</u> forecasting ability analysis teaches steps of evaluating and validating a quantified relationship (<u>Helmer</u> at p. 235, Col. 2, $\ell$. 3-13; Table 7).

34.     <u>Helmer</u>'s fitted model is taken to include computation of the model parameters in order to address the variables present, as claimed by applicant. The purpose of Helmer is to measure the impact of promotion on sales and it is taken to be inherent that the calculated measurements be output to appropriate people for consideration.

35.     With regard to Claims 19, 20, 22, 23, <u>Helmer</u> teaches fitting a univariate auto-regressive model to each of the one or more promotions to determine one or more promotion residual series (<u>Helmer</u> at Fig. 2(2); p. 231, Col. 2, $\ell$. 4-14), regressing performance information for the product to determine a product residual (<u>Helmer</u> at Fig. 2(3)), transforming the product residual into a product residual series (<u>Helmer</u> at Fig.

2(4); p. 231, Col. 2, ℓ. 43 – p. 232, Col. 1, ℓ. 2), determining one or more cross-

correlation functions between the one or more promotion residual series and the

product residual series (Helmer at Fig. 2(5); p. 232, Col. 1, ℓ. 4 – Col. 2, ℓ. 5), plotting the

one or more cross-correlation functions to detect any lagged effect from the one or more

promotions corresponding to the one or more cross-correlation functions (Helmer at Fig.

4), and selecting one or more appropriate functional forms which best fits the plotted

functions (Helmer at Fig. 2(6); Eqns. 14-15).


### Claim Rejections - 35 USC § 103

36.    The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.


37.    **Claims 18-23 are alternately rejected under 35 U.S.C. 103(a) as being**

**unpatentable over Basara in view of Helmer.**

38.    The methods of Helmer and Basara can be combined to provide a model

capable of more accurately identifying the effects of promotions on product performance

by further specifying the effect of a market event.  Regardless of whether a

predetermined market event includes a promotion, the combination of methods taught

by Helmer and Basara specifies a model including terms accounting for the impact of a

promotion (or series of promotions) and terms accounting for the impact of a market

event distinct from the previously mentioned promotion (or promotions). Generally,

Helmer's techniques for identifying and modeling the impact of promotions are

combined with Basara's intervention analysis approach for taking into account the

effects of a discrete market event.

39.     More specifically, the combination relies upon Helmer to teach the steps of

determining a relationship between each of the one or more promotions and the

product, and systematically detecting a promotion lag structure between the one or

more promotions and the product performance for the product. Basara is relied upon to

teach the steps of determining one or more market events, selecting one or more

functional forms to account for an impact of each of the one or more determined market

events which may impact the product performance, and evaluating each of the selected

functional forms to account for the one or more determined market events. Helmer is

also applied to teach the step of quantifying a relationship between the one or more

promotions and the product performance for the product by taking into account the

evaluated selected functional forms. Relevant portions of Helmer and Basara with

respect to each anticipated step correspond to those cited in the original rejections

under 35 U.S.C. 102(b).

40.     Instead of relying only upon Helmer's noise term, $N_t$, to account for unspecified

factors including the effects of a market event (described at Paragraph 71, Basara's

intervention analysis, (e.g. a term similar to $[\omega(B)B^b/\delta(B)]I_t$), is incorporated into

Helmer's method to explicitly specify the effect of a predetermined market event,

thereby improving the specification and explanatory/predictive power of Helmer's model.

41.    With regard to the compatibility of the Helmer and Basara methods, it is noted

that both are directed to time-series analysis involving Box Jenkins transfer function

analysis for advertising data.  Furthermore, intervention analysis is merely an extension

of univariate transfer function analysis (Box 1975; Leone 1987 at p. 464, ℓ. 41).  As

such, intervention analysis is readily combinable with transfer function models.  For

instance, Hanssens (Hanssens, Dominique M., "Market Response, Competitive

Behavior, and Time Series Analysis," Journal of Marketing Research, Nov 1980, Vol.

17, 470-85) provides univariate Box-Jenkins and intervention models to account for the

potential effects of strikes when estimating the primary demand effects of marketing mix

variables (Hanssens at p. 477, Col. 2, ℓ. 1-53; Table 2).

42.    Having established the compatibility of the two methods, one of ordinary skill in

the art at the time of Applicant's invention would look to combine the teachings of

Helmer and Basara to provide a more fully specified model, where econometric model

specification is a fundamental factor in the explanatory and predictive effectiveness.  In

econometrics, models are typically misspecified because of omitted variables (Leone,

Robert P., "Modeling Sales-Advertising Relationships: An Integrated Time Series-

Econometric Approach," Journal of Marketing Research, Vol. 20, Aug 1983, 291-295, at

p. 292, Col. 1, ℓ. 32-35).  Thus, it would have been obvious to one skilled in the art of

time-series data analysis at the time of Applicant's invention to combine the methods of

Helmer and Basara to enhance the specification of Helmer's model, thereby increasing

the explanatory and predictive power of the model.

43.    **Claims 20, 23 are alternately rejected under 35 U.S.C. 103(a) as being**

**unpatentable over <u>Leone 1987</u> in view of <u>Hooley et al</u>. (Hooley, G. J., N. Wilson,**

**and P. Wigodsky, "Modeling the Effects of Advertising: Some Methodological**

**Issues," Journal of the Market Research Society, Jan 1988, Vol. 30, Iss. 1, 45-58,**

**herein "<u>Hooley</u>").**  As noted previously, <u>Leone 1987</u> teaches all limitations of base

Claim 18.  However, <u>Leone 1987</u> does not explicitly describe the limitations recited in

Claim 20.

44.    <u>Hooley</u> remedies the deficiencies of <u>Leone 1987</u> with respect to Claim 20.  In

particular, <u>Hooley</u> provides a method of systematically detecting a promotion lag

structure including steps of fitting a univariate auto-regressive model to each of the one

or more promotions to determine one or more promotion residual series (<u>Hooley</u> at p.

52, $\ell$. 24-27; Figure 1), regressing performance information for the product to determine

a product residual and transforming the product residual into a product residual series

(<u>Hooley</u> at p. 52, $\ell$. 27-32; Figure 1), determining one or more cross-correlation

functions between the one or more promotion residual series and the product residual

series (<u>Hooley</u> at p. 52, $\ell$. 33-35), plotting the one or more cross-correlation functions to

detect any lagged effect from the one or more promotions corresponding to the one or

more cross-correlation functions (<u>Hooley</u> at Table 1), and selecting one or more

appropriate functional forms which best fits the plotted functions (<u>Hooley</u> at p. 52, $\ell$. 35-

42).

45.    Generally, <u>Hooley</u> provides an illustration of how Box Jenkins methodology can

be applied to identify and include the influence of variables other than advertising prior

to econometric modeling (Hooley at Abstract).   The ARIMA modeling and cross-

correlation techniques described by Hooley advantageously provide a better model than

the conventional econometric model (Hooley at p. 57, ℓ. 1-16).  Thus, motivated by the

enhanced predictive and explanatory power of Hooley's approach, it would have been

obvious to one skilled in the art at the time of Applicant's invention to modify Leone

1987's step of detecting promotion lag by applying Hooley's method.


**46.    Claims 20, 23 are alternately rejected under 35 U.S.C. 103(a) as being**

**unpatentable over Box 1975 in view of Haugh et al. (Haugh, Larry D. and G.E.P.**

**Box, "Identification of Dynamic Regression (Distributed Lag) Models Connecting**

**Two Time Series," Journal of the American Statistical Association, March 1977,**

**Vol. 72, No. 357, 121-130, herein "Haugh").**

47.    As described above at Paragraph 58, Box 1975 teaches all limitations of base

Claim 18.  However, Box 1975 does not explicitly disclose all limitations of Claim 20.

Haugh remedies these deficiencies.  Specifically, Haugh provides a method for

systematically detecting a promotion lag structure including steps of fitting a univariate

auto-regressive model to each of the one or more promotions to determine one or more

promotion residual series (Haugh at p. 127, Col. 1, ℓ. 7-9), regressing performance

information for the product to determine a product residual and transforming the product

residual into a product residual series (Haugh at p. 127, Col. 1, ℓ. 1-4; p. 123, Col. 1, ℓ.

45-52), determining one or more cross-correlation functions between the one or more

promotion residual series and the product residual series (Haugh at p. 127, Col. 1, ℓ. 11-

13), plotting the one or more cross-correlation functions to detect any lagged effect from

the one or more promotions corresponding to the one or more cross-correlation

functions (Haugh at Figure A), and selecting one or more appropriate functional forms

which best fits the plotted functions (Haugh at Eqn. 4.3). It is also noted that Haugh.

provides a brief comparison of the disclosed method with the cross-correlation method

of the Box 1976 text cited by Applicant (Haugh at p. 129, Col. 2, $\ell$. 57 – p. 130, Col. 1, $\ell$.

10).

48.     Generally, Haugh is directed to methods for identifying distributed lag models

relating two time series intended to improve upon current identification methods (Haugh

at Abstract; p. 129, Col. 2, $\ell$. 17-20). Thus, motivated to improve the detection of the lag

structure described in Box 1975, one skilled in the art at the time of Applicant's invention

would have found it obvious to modify the step of systematically detecting promotion lag

in Box 1975 by applying Haugh's cross-correlation method.


## *Response to Arguments*

49.     Applicant has stated disagreement with each previous objection and rejection

presented by the examiner. However no specific reasons whatsoever were provided

with respect to any of the issued raised by the examiner. Examiner therefore can only

see fit to repeat the basis for each rejection/objection, especially for the elements of the

new claims that share similarities with the previous claims.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey D. Carlson whose telephone number is 571-272-6716. The examiner can normally be reached on Mon-Fri 8a-5:30p, (work from home on Thursdays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Stamber can be reached on (571)272-6724. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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jdc